

Account of the

Morro Velho Mine

of the

St. John Del Rey

Mining Company
in Brazil.

Presented in connection with World's Fair Exhibit
in Mines Building

with the

Compliments of Fraser & Chalmers
Chicago and London

Also a note of the mill built at the Erith Works (England)
of Fraser & Chalmers for the Morro Velho Mine.

. . The Morro Velho Mine . .

Fifty miles north of the Capitol of Minas Geraes, Brazil, was discovered by Portugese while washing for alluvial gold, and in 1834 the outcrop was worked with poor results in the hands of Padre Freitas, who finally sold the property to

The St. John Del Rey Mining Company of London.

Fuel for steam power not being readily obtainable, hydraulic power was used, and as machinery was difficult of transportation through this wild, mountainous country, the water-wheels and stamps were built from the wood and iron of the locality.

The lode was large and low grade, the output of mine in later years being 6,000 tons of rock per month, treated with 150 head of wood stamps of the Cornish type. The rock rarely contains visible gold, and must be reduced to such a fineness that it will pass 60 gauge mesh—3,600 holes to the square inch.*

Amalgamation in coffers has been repeatedly attempted without success, but by crushing through 60 gauge, concentrating on beds, amalgamating in barrels and re-treating the tailings by concentrating, grinding and amalgamating, the Company has been able to save from 72 to 75 per cent. of the precious metals, alloy 81 per cent. gold, 19 per cent. silver. Many chlorination processes tried in treatment of tailings have not extracted a value of gold equal to the cost of process.

The lode was worked in one mighty excavation 90 feet average length in the widest place, with an average width of 45 feet, necessitating very heavy timber-work, with main logs 5 or 6

* Samples of the rock are shown in exhibit at the World's Columbian Exposition, at the base of monument representing gold production, on which are drawn sectional plan and elevation of the three different workings of the mine.

tons in weight to secure the hanging wall. In securing the excavation an expense of £327,677 was incurred, £213,677 for 44,000 tons of timber, besides an additional cost of £114,000 for fixing.

The gold returns rose in value until 1867, when the timber-work caught fire; it could not be extinguished, and in 1872 the mine was lost. Two new shafts were then sunk, and the lode was struck in 1873, after which the gold returns again rose, amounting in 1876 to 612,843 oitavas, equal 70,651 Troy ounces, a value being realized £163,567.66 in excess of expenditure.

A roof was left over the new mine, separating it from the old, but the lode was still worked in a huge excavation, with expensive timbering. Difficulties in removing portions of the lode reduced stoping area, so that rate of sinking had to be increased to maintain the output.

The rock has varied in value, gold contents increasing until 1876 (yield, 11.045 oitavas, or 1.2731 ounces per ton), then declining for 8 years till reaching the low grade yield of 4.7 oitavas, or 0.5407 ounces per ton, then increasing until 1886 (yield 5.67 oitavas, or 0.6535 ounces per ton). In that year the timber began to fail, and by November the mine was lost.

To reopen the mine, the plans of George Chalmers, Superintendent, were adopted by the Directors. Shafts were sunk nearly half a mile in vertical depth using hand drills at a maximum rate of 111 feet in one shaft, and 213 in two shafts in one month, average rate for winding shaft being 78 feet, and for pumping shaft 84 feet per month) after an unsatisfactory trial of various forms of power rock drills.

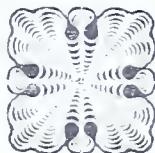
Power for the undertaking involved the use of 40 miles of water courses, 22 miles of fixed and moving wire rope, over 4 miles of iron and steel pipes (up to 30 inches diameter) about 2000 tons timber, and many hundreds of tons of hydraulic winding, pumping, stamping, and other machinery and plant. The lode reached in crosscut No. 7, July, 1892, (proving the position of shafts to be

absolutely correct) was found to be 47 feet wide, and in two different samples of 100 tons and 32 tons respectively, has given a yield of 7 oitavas equal 0.8069 ounces, and 8.1 oitavas equal 0.9337 ounces (Troy) per ton.

Thus the recovery of

. . . The Great Morro Velho Lode . . .

Considerably richer than at the bottom of the old mine (10 fathoms nearer the surface) has rewarded the pluck and determination of the Directors and Stockholders, who have also to congratulate themselves on the cutting of a parallel lode, which though less important than the main lode, promises to be of good value, giving them another string to their bow.



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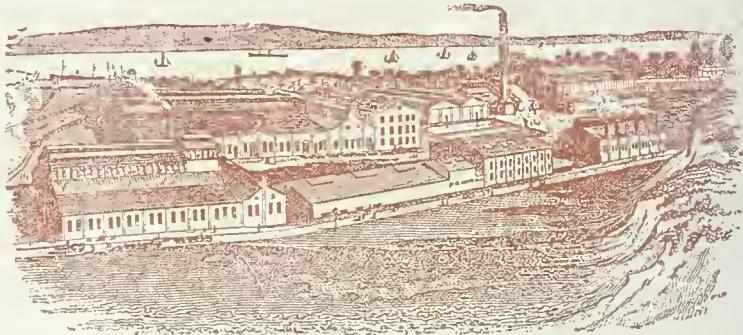
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